



SEQUENCE LISTING

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Sophie Roy
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<120> AUTOANTIGENIC FRAGMENTS, METHODS AND
ASSAYS

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 35 40 45
 Gly Gln Gln Ile Leu Lys Gln Pro Val Ser Glu Arg Leu Asp Phe Val
 50 55 60
 Cys Ser Phe Leu Gln Lys Asn Arg Lys His Pro Ser Ser Pro Glu Cys
 65 70 75 80
 Leu Val Ser Ala Gln Lys Val Leu Glu Gly Ser Glu Leu Glu Leu Ala
 85 90 95

Lys	Met	Thr	Met	Leu	Leu	Leu	Tyr	His	Ser	Thr	Met	Ser	Ser	Lys	Ser	100	105	110
Pro	Arg	Asp	Trp	Glu	Gln	Phe	Glu	Tyr	Lys	Ile	Gln	Ala	Glu	Leu	Ala	115	120	125
Val	Ile	Leu	Lys	Phe	Val	Leu	Asp	His	Glu	Asp	Gly	Leu	Asn	Leu	Asn	130	135	140
Glu	Asp	Leu	Glu	Asn	Phe	Leu	Gln	Lys	Ala	Pro	Val	Pro	Ser	Thr	Cys	145	150	155
Ser	Ser	Thr	Phe	Pro	Glu	Glu	Leu	Ser	Pro	Pro	Ser	His	Gln	Ala	Lys	165	170	175
Arg	Glu	Ile	Arg	Phe	Leu	Glu	Leu	Gln	Lys	Val	Ala	Ser	Ser	Ser	Ser	180	185	190
Gly	Asn	Asn	Phe	Leu	Ser	Gly	Ser	Pro	Ala	Ser	Pro	Met	Gly	Asp	Ile	195	200	205
Leu	Gln	Thr	Pro	Gln	Phe	Gln	Met	Arg	Arg	Leu	Lys	Lys	Gln	Leu	Ala	210	215	220
Asp	Glu	Arg	Ser	Asn	Arg	Asp	Glu	Leu	Glu	Leu	Glu	Leu	Ala	Glu	Asn	225	230	235
Arg	Lys	Leu	Leu	Thr	Glu	Lys	Asp	Ala	Gln	Ile	Ala	Met	Met	Gln	Gln	245	250	255
Arg	Ile	Asp	Arg	Leu	Ala	Leu	Leu	Asn	Glu	Lys	Gln	Ala	Ala	Ser	Pro	260	265	270
Leu	Glu	Pro	Lys	Glu	Leu	Glu	Glu	Leu	Arg	Asp	Lys	Asn	Glu	Ser	Leu	275	280	285
Thr	Met	Arg	Leu	His	Glu	Thr	Leu	Lys	Gln	Cys	Gln	Asp	Leu	Lys	Thr	290	295	300
Glu	Lys	Ser	Gln	Met	Asp	Arg	Lys	Ile	Asn	Gln	Leu	Ser	Glu	Glu	Asn	305	310	315
Gly	Asp	Leu	Ser	Phe	Lys	Leu	Arg	Glu	Phe	Ala	Ser	His	Leu	Gln	Gln	325	330	335
Leu	Gln	Asp	Ala	Leu	Asn	Glu	Leu	Thr	Glu	Glu	His	Ser	Lys	Ala	Thr	340	345	350
Gln	Glu	Trp	Leu	Glu	Lys	Gln	Ala	Gln	Leu	Glu	Lys	Glu	Leu	Ser	Ala	355	360	365
Ala	Leu	Gln	Asp	Lys	Lys	Cys	Leu	Glu	Glu	Lys	Asn	Glu	Ile	Leu	Gln	370	375	380
Gly	Lys	Leu	Ser	Gln	Leu	Glu	Glu	His	Leu	Ser	Gln	Leu	Gln	Asp	Asn	385	390	395
Pro	Pro	Gln	Glu	Lys	Gly	Glu	Val	Leu	Gly	Asp	Val	Leu	Gln	Leu	Glu	405	410	415
Thr	Leu	Lys	Gln	Glu	Ala	Ala	Thr	Leu	Ala	Ala	Asn	Asn	Thr	Gln	Leu	420	425	430
Gln	Ala	Arg	Val	Glu	Met	Leu	Glu	Thr	Glu	Arg	Gly	Gln	Gln	Glu	Ala	435	440	445
Lys	Leu	Leu	Ala	Glu	Arg	Gly	His	Phe	Glu	Glu	Glu	Lys	Gln	Gln	Leu	450	455	460
Ser	Ser	Leu	Ile	Thr	Asp	Leu	Gln	Ser	Ser	Ile	Ser	Asn	Leu	Ser	Gln	465	470	475
Ala	Lys	Glu	Glu	Leu	Glu	Gln	Ala	Ser	Gln	Ala	His	Gly	Ala	Arg	Leu	485	490	495
Thr	Ala	Gln	Val	Ala	Ser	Leu	Thr	Ser	Glu	Leu	Thr	Thr	Leu	Asn	Ala	500	505	510
Thr	Ile	Gln	Gln	Gln	Asp	Gln	Glu	Leu	Ala	Gly	Leu	Lys	Gln	Gln	Ala	515	520	525

Lys Glu Lys Gln Ala Gln Leu Ala Gln Thr Leu Gln Gln Gln Glu Gln
 530 535 540
 Ala Ser Gln Gly Leu Arg His Gln Val Glu Gln Leu Ser Ser Ser Leu
 545 550 555 560
 Lys Gln Lys Glu Gln Gln Leu Lys Glu Val Ala Glu Lys Gln Glu Ala
 565 570 575
 Thr Arg Gln Asp His Ala Gln Gln Leu Ala Thr Ala Ala Glu Glu Arg
 580 585 590
 Glu Ala Ser Leu Arg Glu Arg Asp Ala Ala Leu Lys Gln Leu Glu Ala
 595 600 605
 Leu Glu Lys Glu Lys Ala Ala Lys Leu Glu Ile Leu Gln Gln Gln Leu
 610 615 620
 Gln Val Ala Asn Glu Ala Arg Asp Ser Ala Gln Thr Ser Val Thr Gln
 625 630 635 640
 Ala Gln Arg Glu Lys Ala Glu Leu Ser Arg Lys Val Glu Glu Leu Gln
 645 650 655
 Ala Cys Val Glu Thr Ala Arg Gln Glu Gln His Glu Ala Gln Ala Gln
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 Val Ala Glu Leu Glu Leu Gln Leu Arg Ser Glu Gln Gln Lys Ala Thr
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 Glu Lys Glu Arg Val Ala Gln Glu Lys Asp Gln Leu Gln Glu Gln Leu
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 Gln Ala Leu Lys Glu Ser Leu Lys Val Thr Lys Gly Ser Leu Glu Glu
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 Glu Lys Arg Arg Ala Ala Asp Ala Leu Glu Glu Gln Gln Arg Cys Ile
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 Ser Glu Leu Lys Ala Glu Thr Arg Ser Leu Val Glu Gln His Lys Arg
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 Glu Arg Lys Glu Leu Glu Glu Glu Arg Ala Gly Arg Lys Gly Leu Glu
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 Ala Arg Leu Leu Gln Leu Gly Glu Ala His Gln Ala Glu Thr Glu Val
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 Tyr Glu Asp Ser Gln Gln Glu Glu Ala Gln Tyr Gly Ala Met Phe Gln
 820 825 830
 Glu Gln Leu Met Thr Leu Lys Glu Glu Cys Glu Lys Ala Arg Gln Glu
 835 840 845
 Leu Gln Glu Ala Lys Glu Lys Val Ala Gly Ile Glu Ser His Ser Glu
 850 855 860
 Leu Gln Ile Ser Arg Gln Gln Asn Lys Leu Ala Glu Leu His Ala Asn
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 Lys Leu Ala Asp Asp Leu Ser Thr Leu Gln Glu Lys Met Ala Ala Thr
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Cys Ser Thr Gln Ala Ala Leu Gln Ala Met Glu Arg Glu Ala Glu Gln
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 Met Gly Asn Glu Leu Glu Arg Leu Arg Ala Ala Leu Met Glu Ser Gln
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 Thr Glu Lys Glu Gly Lys Asp Gln Glu Leu Ala Lys Leu Arg Gly Leu
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 1075 1080 1085
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 1155 1160 1165
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 Thr Leu Gln Leu Glu His Thr Ser Thr Gln Ala Leu Val Ser Glu Leu
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 Leu Pro Ala Lys His Leu Cys Gln Gln Leu Gln Ala Glu Gln Ala Ala
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Gly Gly Leu Arg Ala Glu Leu Leu Arg Ala Gln Arg Glu Leu Gly Glu
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 Gln Leu Arg Ala Glu Lys Ala Ser Tyr Ala Glu Gln Leu Ser Met Leu
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 Arg Thr Gln Pro Asp Gly Thr Ser Val Pro Gly Glu Pro Ala Ser Pro
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 1845 1850 1855
 Leu Ser Leu Pro Gly Tyr Arg Pro Thr Thr Arg Ser Ser Ala Arg Arg
 1860 1865 1870
 Ser Gln Ala Gly Val Ser Ser Gly Ala Pro Pro Gly Arg Asn Ser Phe
 1875 1880 1885
 Tyr Met Gly Thr Cys Gln Asp Glu Pro Glu Gln Leu Asp Asp Trp Asn
 1890 1895 1900
 Arg Ile Ala Glu Leu Gln Gln Arg Asn Arg Val Cys Pro Pro His Leu
 1905 1910 1915 1920
 Lys Thr Cys Tyr Pro Leu Glu Ser Arg Pro Ser Leu Ser Leu Gly Thr
 1925 1930 1935
 Ile Thr Asp Glu Glu Met Lys Thr Gly Asp Pro Gln Glu Thr Leu Arg
 1940 1945 1950
 Arg Ala Ser Met Gln Pro Ile Gln Ile Ala Glu Gly Thr Gly Ile Thr
 1955 1960 1965
 Thr Arg Gln Gln Arg Lys Arg Val Ser Leu Glu Pro His Gln Gly Pro
 1970 1975 1980
 Gly Thr Pro Glu Ser Lys Lys Ala Thr Ser Cys Phe Pro Arg Pro Met
 1985 1990 1995 2000
 Thr Pro Arg Asp Arg His Glu Gly Arg Lys Gln Ser Thr Thr Glu Ala
 2005 2010 2015
 Gln Lys Lys Ala Ala Pro Ala Ser Thr Lys Gln Ala Asp Arg Arg Gln
 2020 2025 2030
 Ser Met Ala Phe Ser Ile Leu Asn Thr Pro Lys Lys Leu Gly Asn Ser
 2035 2040 2045
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 35 40 45
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 50 55 60
 Cys Ser Phe Leu Gln Lys Asn Arg Lys His Pro Ser Ser Pro Glu Cys
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 225 230 235 240
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 260 265 270
 Leu Glu Pro Lys Glu Leu Glu Glu Leu Arg Asp Lys Asn Glu Ser Leu
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 Glu Lys Ser Gln Met Asp Arg Lys Ile Asn Gln Leu Ser Glu Glu Asn
 305 310 315 320
 Gly Asp Leu Ser Phe Lys Leu Arg Glu Phe Ala Ser His Leu Gln Gln
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 Ala Leu Gln Asp Lys Lys Cys Leu Glu Glu Lys Asn Glu Ile Leu Gln
 370 375 380
 Gly Lys Leu Ser Gln Leu Glu Glu His Leu Ser Gln Leu Gln Asp Asn
 385 390 395 400
 Pro Pro Gln Glu Lys Gly Glu Val Leu Gly Asp Val Leu Gln Leu Glu
 405 410 415
 Thr Leu Lys Gln Glu Ala Ala Thr Leu Ala Ala Asn Asn Thr Gln Leu
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 Gln Ala Arg Val Glu Met Leu Glu Thr Glu Arg Gly Gln Gln Glu Ala
 435 440 445
 Lys Leu Leu Ala Glu Arg Gly His Phe Glu Glu Glu Lys Gln Gln Leu
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 Ser Ser Leu Ile Thr Asp Leu Gln Ser Ser Ile Ser Asn Leu Ser Gln
 465 470 475 480
 Ala Lys Glu Glu Leu Glu Gln Ala Ser Gln Ala His Gly Ala Arg Leu
 485 490 495
 Thr Ala Gln Val Ala Ser Leu Thr Ser Glu Leu Thr Thr Leu Asn Ala
 500 505 510

Thr	Ile	Gln	Gln	Gln	Asp	Gln	Glu	Leu	Ala	Gly	Leu	Lys	Gln	Gln	Ala	
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Lys	Glu	Lys	Gln	Ala	Gln	Leu	Ala	Gln	Thr	Leu	Gln	Gln	Gln	Glu	Gln	
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Ala	Ser	Gln	Gly	Leu	Arg	His	Gln	Val	Glu	Gln	Leu	Ser	Ser	Ser	Leu	
		545				550				555					560	
Lys	Gln	Lys	Glu	Gln	Gln	Leu	Lys	Glu	Val	Ala	Glu	Lys	Gln	Glu	Ala	
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Thr	Arg	Gln	Asp	His	Ala	Gln	Gln	Leu	Ala	Thr	Ala	Ala	Glu	Glu	Arg	
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Glu	Ala	Ser	Leu	Arg	Glu	Arg	Asp	Ala	Ala	Leu	Lys	Gln	Leu	Glu	Ala	
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Leu	Glu	Lys	Glu	Lys	Ala	Ala	Lys	Leu	Glu	Ile	Leu	Gln	Gln	Gln	Leu	
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Gln	Val	Ala	Asn	Glu	Ala	Arg	Asp	Ser	Ala	Gln	Thr	Ser	Val	Thr	Gln	
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Ala	Gln	Arg	Glu	Lys	Ala	Glu	Leu	Ser	Arg	Lys	Val	Glu	Glu	Leu	Gln	
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Ala	Cys	Val	Glu	Thr	Ala	Arg	Gln	Glu	Gln	His	Glu	Ala	Gln	Ala	Gln	
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Val	Ala	Glu	Leu	Glu	Leu	Gln	Leu	Arg	Ser	Glu	Gln	Gln	Lys	Ala	Thr	
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Glu	Lys	Glu	Arg	Val	Ala	Gln	Glu	Lys	Asp	Gln	Leu	Gln	Glu	Gln	Leu	
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Gln	Ala	Leu	Lys	Glu	Ser	Leu	Lys	Val	Thr	Lys	Gly	Ser	Leu	Glu	Glu	
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Glu	Lys	Arg	Arg	Ala	Ala	Asp	Ala	Leu	Glu	Glu	Gln	Gln	Arg	Cys	Ile	
				725					730					735		
Ser	Glu	Leu	Lys	Ala	Glu	Thr	Arg	Ser	Leu	Val	Glu	Gln	His	Lys	Arg	
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Glu	Arg	Lys	Glu	Leu	Glu	Glu	Glu	Arg	Ala	Gly	Arg	Lys	Gly	Leu	Glu	
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Ala	Arg	Leu	Gln	Gln	Leu	Gly	Glu	Ala	His	Gln	Ala	Glu	Thr	Glu	Val	
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Leu	Arg	Arg	Glu	Leu	Ala	Glu	Ala	Met	Ala	Ala	Gln	His	Thr	Ala	Glu	
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Ser	Glu	Cys	Glu	Gln	Leu	Val	Lys	Glu	Val	Ala	Ala	Trp	Arg	Glu	Arg	
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Tyr	Glu	Asp	Ser	Gln	Gln	Glu	Glu	Ala	Gln	Tyr	Gly	Ala	Met	Phe	Gln	
			820						825					830		
Glu	Gln	Leu	Met	Thr	Leu	Lys	Glu	Glu	Cys	Glu	Lys	Ala	Arg	Gln	Glu	
		835						840					845			
Leu	Gln	Glu	Ala	Lys	Glu	Lys	Val	Ala	Gly	Ile	Glu	Ser	His	Ser	Glu	
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Leu	Gln	Ile	Ser	Arg	Gln	Gln	Asn	Glu	Leu	Ala	Glu	Leu	His	Ala	Asn	
		865				870					875				880	
Leu	Ala	Arg	Ala	Leu	Gln	Gln	Val	Gln	Glu	Lys	Glu	Val	Arg	Ala	Gln	
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Lys	Leu	Ala	Asp	Asp	Leu	Ser	Thr	Leu	Gln	Glu	Lys	Met	Ala	Ala	Thr	
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Ser	Lys	Glu	Val	Ala	Arg	Leu	Glu	Thr	Leu	Val	Arg	Lys	Ala	Gly	Glu	
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Gln	Gln	Glu	Thr	Ala	Ser	Arg	Glu	Leu	Val	Lys	Glu	Pro	Ala	Arg	Ala	
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Gly Asp Arg Gln Pro Glu Trp Leu Glu Glu Gln Gln Gly Arg Gln Phe
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 Cys Ser Thr Gln Ala Ala Leu Gln Ala Met Glu Arg Glu Ala Glu Gln
 965 970 975
 Met Gly Asn Glu Leu Glu Arg Leu Arg Ala Ala Leu Met Glu Ser Gln
 980 985 990
 Gly Gln Gln Gln Glu Glu Arg Gly Gln Gln Glu Arg Glu Val Ala Arg
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 Thr Glu Lys Glu Gly Lys Asp Gln Glu Leu Ala Lys Leu Arg Gly Leu
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 Ser Gly Ala Gln Ser Glu Ala Ala Gly Arg Thr Glu Pro Thr Gly Pro
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 Glu Arg Ala Ser Arg Ala Glu Arg Asp Ser Ala Leu Glu Thr Leu Gln
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 Gly Gln Leu Glu Glu Lys Ala Gln Glu Leu Gly His Ser Gln Ser Ala
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 Asp His Ser Lys Ala Glu Asp Glu Trp Lys Ala Gln Val Ala Arg Gly
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 Gln Glu Leu Thr Ser Gln Ala Glu Arg Ala Glu Glu Leu Gly Gln Glu
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 Leu Lys Ala Trp Gln Glu Lys Phe Phe Gln Lys Glu Gln Ala Leu Ser
 1330 1335 1340
 Thr Leu Gln Leu Glu His Thr Ser Thr Gln Ala Leu Val Ser Glu Leu
 1345 1350 1355 1360
 Leu Pro Ala Lys His Leu Cys Gln Gln Leu Gln Ala Glu Gln Ala Ala
 1365 1370 1375

Ala Glu Lys Arg His Arg Glu Glu Leu Glu Gln Ser Lys Gln Ala Ala
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 Gly Gly Leu Arg Ala Glu Leu Leu Arg Ala Gln Arg Glu Leu Gly Glu
 1395 1400 1405
 Leu Ile Pro Leu Arg Gln Lys Val Ala Glu Gln Glu Arg Thr Ala Gln
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 1425 1430 1435 1440
 Lys Lys Ala His Gly Leu Leu Ala Glu Glu Asn Arg Gly Leu Gly Glu
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 Ser Gln Lys Glu Gln Ala Ala Glu His Tyr Lys Leu Gln Met Glu Lys
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 Ala Lys Thr His Tyr Asp Ala Lys Lys Gln Gln Asn Gln Glu Leu Gln
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 1700 1705 1710
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 1730 1735 1740
 Gln Pro Asp Gly Thr Ser Val Pro Gly Glu Pro Ala Ser Pro Ile Ser
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 Gln Arg Leu Pro Pro Lys Val Glu Ser Leu Glu Ser Leu Tyr Phe Thr
 1765 1770 1775
 Pro Ile Pro Ala Arg Ser Gln Ala Pro Leu Glu Ser Ser Leu Asp Ser
 1780 1785 1790
 Leu Gly Asp Val Phe Gln Asp Ser Gly Arg Lys Thr Arg Ser Ala Arg
 1795 1800 1805

Arg Arg Thr Thr Gln Ile Ile Asn Ile Thr Met Thr Lys Lys Leu Asp
 1810 1815 1820
 Val Glu Glu Pro Asp Ser Ala Asn Ser Ser Phe Tyr Ser Thr Arg Ser
 1825 1830 1835 1840
 Ala Pro Ala Ser Gln Ala Ser Leu Arg Ala Thr Ser Ser Thr Gln Ser
 1845 1850 1855
 Leu Ala Arg Leu Gly Ser Pro Asp Tyr Gly Asn Ser Ala Leu Leu Ser
 1860 1865 1870
 Leu Pro Gly Tyr Arg Pro Thr Thr Arg Ser Ser Ala Arg Arg Ser Gln
 1875 1880 1885
 Ala Gly Val Ser Ser Gly Ala Pro Pro Gly Arg Asn Ser Phe Tyr Met
 1890 1895 1900
 Gly Thr Cys Gln Asp Glu Pro Glu Gln Leu Asp Asp Trp Asn Arg Ile
 1905 1910 1915 1920
 Ala Glu Leu Gln Gln Arg Asn Arg Val Cys Pro Pro His Leu Lys Thr
 1925 1930 1935
 Cys Tyr Pro Leu Glu Ser Arg Pro Ser Leu Ser Leu Gly Thr Ile Thr
 1940 1945 1950
 Asp Glu Glu Met Lys Thr Gly Asp Pro Gln Glu Thr Leu Arg Arg Ala
 1955 1960 1965
 Ser Met Gln Pro Ile Gln Ile Ala Glu Gly Thr Gly Ile Thr Thr Arg
 1970 1975 1980
 Gln Gln Arg Lys Arg Val Ser Leu Glu Pro His Gln Gly Pro Gly Thr
 1985 1990 1995 2000
 Pro Glu Ser Lys Lys Ala Thr Ser Cys Phe Pro Arg Pro Met Thr Pro
 2005 2010 2015
 Arg Asp Arg His Glu Gly Arg Lys Gln Ser Thr Thr Glu Ala Gln Lys
 2020 2025 2030
 Lys Ala Ala Pro Ala Ser Thr Lys Gln Ala Asp Arg Arg Gln Ser Met
 2035 2040 2045
 Ala Phe Ser Ile Leu Asn Thr Pro Lys Lys Leu Gly Asn Ser Leu Leu
 2050 2055 2060
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 2065 2070 2075 2080
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 Ala Lys His
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 <223> Xaa = Any Amino Acid

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			20					25						30			
Gln	Leu	Ile	Arg	Gly	Leu	Gly	Gln	Glu	Cys	Val	Leu	Ser	Ser	Ser	Pro		
		35					40					45					
Ala	Val	Leu	Ala	Leu	Gln	Thr	Ser	Leu	Val	Phe	Ser	Arg	Asp	Phe	Gly		
		50				55				60							
Leu	Leu	Val	Phe	Val	Arg	Lys	Ser	Leu	Asn	Ser	Ile	Glu	Phe	Arg	Glu		
65					70					75					80		
Cys	Arg	Glu	Glu	Ile	Leu	Lys	Phe	Leu	Cys	Ile	Phe	Leu	Glu	Lys	Met		
				85					90					95			
Gly	Gln	Lys	Ile	Ala	Pro	Tyr	Ser	Val	Glu	Ile	Lys	Asn	Thr	Cys	Thr		
			100					105					110				
Ser	Val	Tyr	Thr	Lys	Asp	Arg	Ala	Ala	Lys	Cys	Lys	Ile	Pro	Ala	Leu		
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Asp	Leu	Leu	Ile	Lys	Leu	Leu	Gln	Thr	Phe	Arg	Ser	Ser	Arg	Leu	Met		
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Asp	Glu	Phe	Lys	Ile	Gly	Glu	Leu	Phe	Ser	Lys	Phe	Tyr	Gly	Glu	Leu		
145					150					155					160		
Ala	Leu	Lys	Lys	Lys	Ile	Pro	Asp	Thr	Val	Leu	Glu	Lys	Val	Tyr	Glu		
				165					170					175			
Leu	Leu	Gly	Leu	Leu	Gly	Glu	Val	His	Pro	Ser	Glu	Met	Ile	Asn	Asn		
			180					185					190				
Ala	Glu	Asn	Leu	Phe	Arg	Ala	Phe	Leu	Gly	Glu	Leu	Lys	Thr	Gln	Met		
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Thr	Ser	Ala	Val	Arg	Glu	Pro	Lys	Leu	Pro	Val	Leu	Ala	Gly	Cys	Leu		
		210				215					220						
Lys	Gly	Leu	Ser	Ser	Leu	Leu	Cys	Asn	Phe	Thr	Lys	Ser	Met	Glu	Glu		
225					230					235				240			
Asp	Pro	Gln	Thr	Ser	Arg	Glu	Ile	Phe	Asn	Phe	Val	Leu	Lys	Ala	Ile		
				245					250					255			
Arg	Pro	Gln	Ile	Asp	Leu	Lys	Arg	Tyr	Ala	Val	Pro	Ser	Ala	Gly	Leu		
			260					265					270				
Arg	Leu	Phe	Ala	Leu	His	Ala	Ser	Gln	Phe	Ser	Thr	Cys	Leu	Leu	Asp		
		275				280						285					
Asn	Tyr	Val	Ser	Leu	Phe	Glu	Val	Leu	Ile	Lys	Trp	Cys	Ala	His	Thr		
		290				295					300						
Asn	Val	Glu	Leu	Lys	Lys	Ala	Ala	Leu	Ser	Ala	Leu	Glu	Ser	Phe	Leu		
305					310					315					320		
Lys	Gln	Val	Ser	Asn	Met	Val	Ala	Lys	Asn	Ala	Glu	Met	His	Lys	Asn		
				325					330					335			
Lys	Leu	Gln	Tyr	Glu	Met	Glu	Gln	Phe	Tyr	Gly	Ile	Ile	Arg	Asn	Val		
			340					345					350				
Asp	Ser	Asn	Asn	Lys	Glu	Leu	Ser	Ile	Ala	Ile	Arg	Gly	Tyr	Gly	Leu		
		355					360					365					
Phe	Ala	Gly	Pro	Cys	Lys	Val	Ile	Asn	Ala	Lys	Asp	Val	Asp	Phe	Met		
		370				375					380						
Tyr	Val	Glu	Leu	Ile	Gln	Arg	Cys	Lys	Gln	Met	Phe	Leu	Thr	Gln	Thr		
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Asp	Thr	Gly	Asp	Tyr	Arg	Val	Tyr	Gln	Met	Pro	Ser	Phe	Leu	Gln	Ser		
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Val	Ala	Ser	Val	Leu	Leu	Tyr	Leu	Asp	Thr	Val	Pro	Glu	Val	Tyr	Thr		
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Pro	Val	Leu	Glu	His	Leu	Val	Val	Met	Gln	Ile	Asp	Ser	Phe	Pro	Gln		
		435					440					445					

Tyr	Ser	Pro	Lys	Met	Gln	Leu	Val	Cys	Cys	Arg	Ala	Ile	Val	Lys	Val	450	455	460
Phe	Leu	Ala	Leu	Ala	Ala	Lys	Gly	Pro	Val	Leu	Arg	Asn	Cys	Ile	Ser	465	470	475
Thr	Val	Val	His	Gln	Gly	Leu	Ile	Arg	Ile	Cys	Ser	Lys	Pro	Val	Val	485	490	495
Leu	Pro	Lys	Gly	Pro	Glu	Ser	Glu	Ser	Glu	Asp	His	Arg	Ala	Ser	Gly	500	505	510
Glu	Val	Arg	Thr	Gly	Lys	Trp	Lys	Val	Pro	Thr	Tyr	Lys	Asp	Tyr	Val	515	520	525
Asp	Leu	Phe	Arg	His	Leu	Leu	Ser	Ser	Asp	Gln	Met	Met	Asp	Ser	Ile	530	535	540
Leu	Ala	Asp	Glu	Ala	Phe	Phe	Ser	Val	Asn	Ser	Ser	Ser	Glu	Ser	Leu	545	550	555
Asn	His	Leu	Leu	Tyr	Asp	Glu	Phe	Val	Lys	Ser	Val	Leu	Lys	Ile	Val	565	570	575
Glu	Lys	Leu	Asp	Leu	Thr	Leu	Glu	Ile	Gln	Thr	Val	Gly	Glu	Gln	Glu	580	585	590
Asn	Gly	Asp	Glu	Ala	Pro	Gly	Val	Trp	Met	Ile	Pro	Thr	Ser	Asp	Pro	595	600	605
Ala	Ala	Asn	Leu	His	Pro	Ala	Lys	Pro	Lys	Asp	Phe	Ser	Ala	Phe	Ile	610	615	620
Asn	Leu	Val	Glu	Phe	Cys	Arg	Glu	Ile	Leu	Pro	Glu	Lys	Gln	Ala	Glu	625	630	635
Phe	Phe	Glu	Pro	Trp	Val	Tyr	Ser	Phe	Ser	Tyr	Glu	Leu	Ile	Leu	Gln	645	650	655
Ser	Thr	Arg	Leu	Pro	Leu	Ile	Ser	Gly	Phe	Tyr	Lys	Leu	Leu	Ser	Ile	660	665	670
Thr	Val	Arg	Asn	Ala	Lys	Lys	Ile	Lys	Tyr	Phe	Glu	Gly	Val	Ser	Pro	675	680	685
Lys	Ser	Leu	Lys	His	Ser	Pro	Glu	Asp	Pro	Glu	Lys	Tyr	Ser	Cys	Phe	690	695	700
Ala	Leu	Phe	Val	Lys	Phe	Gly	Lys	Glu	Val	Ala	Val	Lys	Met	Lys	Gln	705	710	715
Tyr	Lys	Asp	Glu	Leu	Leu	Ala	Ser	Cys	Leu	Thr	Phe	Leu	Leu	Ser	Leu	725	730	735
Pro	His	Asn	Ile	Ile	Glu	Leu	Asp	Val	Arg	Ala	Tyr	Val	Pro	Ala	Leu	740	745	750
Gln	Met	Ala	Phe	Lys	Leu	Gly	Leu	Ser	Tyr	Thr	Pro	Leu	Ala	Glu	Val	755	760	765
Gly	Leu	Asn	Ala	Leu	Glu	Glu	Trp	Ser	Ile	Tyr	Ile	Asp	Arg	His	Val	770	775	780
Met	Gln	Pro	Tyr	Tyr	Lys	Asp	Ile	Leu	Pro	Cys	Leu	Asp	Gly	Tyr	Leu	785	790	795
Lys	Thr	Ser	Ala	Leu	Ser	Asp	Glu	Thr	Lys	Asn	Asn	Trp	Glu	Val	Ser	805	810	815
Ala	Leu	Ser	Arg	Ala	Ala	Gln	Lys	Gly	Phe	Asn	Lys	Val	Val	Leu	Lys	820	825	830
His	Leu	Lys	Lys	Thr	Lys	Asn	Leu	Ser	Ser	Asn	Glu	Ala	Ile	Ser	Leu	835	840	845
Glu	Glu	Ile	Arg	Ile	Arg	Val	Val	Gln	Met	Leu	Gly	Ser	Leu	Gly	Gly	850	855	860
Gln	Ile	Asn	Lys	Asn	Leu	Leu	Thr	Val	Thr	Ser	Ser	Asp	Glu	Met	Met	865	870	875

Lys Ser Tyr Val Ala Trp Asp Arg Glu Lys Arg Leu Ser Phe Ala Val
 885 890 895
 Pro Phe Arg Glu Met Lys Pro Val Ile Phe Leu Asp Val Phe Leu Pro
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 Arg Val Thr Glu Leu Ala Leu Thr Ala Ser Asp Arg Gln Thr Lys Val
 915 920 925
 Ala Ala Cys Glu Leu Leu His Ser Met Val Met Phe Met Leu Gly Lys
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 Ala Thr Gln Met Pro Glu Gly Gly Gln Gly Ala Pro Pro Met Tyr Gln
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 Leu Tyr Lys Arg Thr Phe Pro Val Leu Leu Arg Leu Ala Cys Asp Val
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 Asp Gln Val Thr Arg Gln Leu Tyr Glu Pro Leu Val Met Gln Leu Ile
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 His Trp Phe Thr Asn Asn Lys Lys Phe Glu Ser Gln Asp Thr Val Ser
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 Val Ile Tyr Met Glu Ser Leu Ala Leu Ala His Ala Asp Glu Lys Ser
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 Ser Leu Gln Ala Thr Leu Cys Trp Leu Asp Leu Leu Leu Ala Ala Leu
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 Glu Cys Tyr Asn Thr Phe Ile Gly Glu Arg Thr Val Gly Ala Leu Gln
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 Val Leu Gly Thr Glu Ala Gln Ser Ser Leu Leu Lys Ala Val Ala Phe
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 Phe Leu Glu Ser Ile Ala Met His Asp Ile Ile Ala Ala Glu Lys Cys
 1300 1305 1310

Phe Gly Thr Gly Ala Ala Gly Asn Arg Thr Ser Pro Gln Glu Gly Glu
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 Arg Tyr Asn Tyr Ser Lys Cys Thr Val Val Val Arg Ile Met Glu Phe
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 Thr Thr Thr Leu Leu Asn Thr Ser Pro Glu Gly Trp Lys Leu Leu Lys
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 Lys Asp Leu Cys Asn Thr His Leu Met Arg Val Leu Val Gln Thr Leu
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 Cys Glu Pro Ala Ser Ile Gly Phe Asn Ile Gly Asp Val Gln Val Met
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 Ala His Leu Pro Asp Val Cys Val Asn Leu Met Lys Ala Leu Lys Met
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 Ser Pro Tyr Lys Asp Ile Leu Glu Thr His Leu Arg Glu Lys Ile Thr
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 Ala Gln Val Asp Arg Ser Arg Leu Ala Ala Val Val Ser Ala Cys Lys
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 Gln Leu His Arg Ala Gly Leu Leu His Asn Ile Leu Pro Ser Gln Ser
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 Thr Asp Leu His His Ser Val Gly Thr Glu Leu Leu Ser Leu Val Tyr
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 Lys Gly Ile Ala Pro Gly Asp Glu Arg Gln Cys Leu Pro Ser Leu Asp
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 Leu Ser Cys Lys Gln Leu Ala Ser Gly Leu Leu Glu Leu Ala Phe Ala
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 Val Leu Ser Thr Ala Ser Leu Gly Ser Ser Gln Gly Ser Val Ile His
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 Phe Ser His Gly Glu Tyr Phe Tyr Ser Leu Phe Ser Glu Thr Ile Asn
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 Thr Glu Leu Leu Lys Asn Leu Asp Leu Ala Val Leu Glu Leu Met Gln
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 Ser Ser Val Asp Asn Thr Lys Met Val Ser Ala Val Leu Asn Gly Met
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 Leu Asp Gln Ser Phe Arg Glu Arg Ala Asn Gln Lys His Gln Gly Leu
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 Leu Ala Lys Ile Leu Gln Ile Asp Ser Ser Val Ser Phe Asn Thr Ser
 1650 1655 1660
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 Asp Thr Lys Leu Asp Leu His Leu Lys Gly Gln Ala Val Thr Leu Leu
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 Thr Gln Val Gly Leu Leu Glu Ser Val Tyr Glu Met Phe Arg Lys Asp
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 Asp Pro Arg Leu Ser Phe Thr Arg Gln Ser Phe Val Asp Arg Ser Leu
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 Ser Thr Ile Val Val Asp Ala Ile Asp Val Leu Lys Ser Arg Phe Thr
 1845 1850 1855
 Lys Leu Asn Glu Ser Thr Phe Asp Thr Gln Ile Thr Lys Lys Met Gly
 1860 1865 1870
 Tyr Tyr Lys Ile Leu Asp Val Met Tyr Ser Arg Leu Pro Lys Asp Asp
 1875 1880 1885
 Val His Ala Lys Glu Ser Lys Ile Asn Gln Val Phe His Gly Ser Cys
 1890 1895 1900
 Ile Thr Glu Gly Asn Glu Leu Thr Lys Thr Leu Ile Lys Leu Cys Tyr
 1905 1910 1915 1920
 Asp Ala Phe Thr Glu Asn Met Ala Gly Glu Asn Gln Leu Leu Glu Arg
 1925 1930 1935
 Arg Arg Leu Tyr His Cys Ala Ala Tyr Asn Cys Ala Ile Ser Val Ile
 1940 1945 1950
 Cys Cys Val Phe Asn Glu Leu Lys Phe Tyr Gln Gly Phe Leu Phe Ser
 1955 1960 1965
 Glu Lys Pro Glu Lys Asn Leu Leu Ile Phe Glu Asn Leu Ile Asp Leu
 1970 1975 1980
 Lys Arg Arg Tyr Asn Phe Pro Val Glu Val Glu Val Pro Met Glu Arg
 1985 1990 1995 2000
 Lys Lys Lys Tyr Ile Glu Ile Arg Lys Glu Ala Arg Glu Ala Ala Asn
 2005 2010 2015
 Gly Asp Ser Asp Gly Pro Ser Tyr Met Ser Ser Leu Ser Tyr Leu Ala
 2020 2025 2030
 Asp Ser Thr Leu Ser Glu Glu Met Ser Gln Phe Asp Phe Ser Thr Gly
 2035 2040 2045
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 2050 2055 2060
 Arg Phe Arg Arg Arg Glu Gln Arg Asp Pro Thr Val His Asp Asp Val
 2065 2070 2075 2080
 Leu Glu Leu Glu Met Asp Glu Leu Asn Arg His Glu Cys Met Ala Pro
 2085 2090 2095
 Leu Thr Ala Leu Val Lys His Met His Arg Ser Leu Gly Pro Pro Gln
 2100 2105 2110
 Gly Glu Glu Asp Ser Val Pro Arg Asp Leu Pro Ser Trp Met Lys Phe
 2115 2120 2125
 Leu His Gly Lys Leu Gly Asn Pro Ile Val Pro Leu Asn Ile Arg Leu
 2130 2135 2140
 Phe Leu Ala Lys Leu Val Ile Asn Thr Glu Glu Val Phe Arg Pro Tyr
 2145 2150 2155 2160
 Ala Lys His Trp Leu Ser Pro Leu Leu Gln Leu Ala Ala Ser Glu Asn
 2165 2170 2175

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Asn Gly Gly Glu Gly Ile His Tyr Met Val Val Glu Ile Val Ala Thr
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Ile Leu Ser Trp Thr Gly Leu Ala Thr Pro Thr Gly Val Pro Lys Asp
      2195                      2200                      2205
Glu Val Leu Ala Asn Arg Leu Leu Asn Phe Leu Met Lys His Val Phe
      2210                      2215                      2220
His Pro Lys Arg Ala Val Phe Arg His Asn Leu Glu Ile Ile Lys Thr
      2225                      2230                      2235                      2240
Leu Val Glu Cys Trp Lys Asp Cys Leu Ser Ile Pro Tyr Arg Leu Ile
      2245                      2250                      2255
Phe Glu Lys Phe Ser Gly Lys Asp Pro Asn Ser Lys Asp Asn Ser Val
      2260                      2265                      2270
Gly Ile Gln Leu Leu Gly Ile Val Met Ala Asn Asp Leu Pro Pro Tyr
      2275                      2280                      2285
Asp Pro Gln Cys Gly Ile Gln Ser Ser Glu Tyr Phe Gln Ala Leu Val
      2290                      2295                      2300
Asn Asn Met Ser Phe Val Arg Tyr Lys Glu Val Tyr Ala Ala Ala Ala
      2305                      2310                      2315                      2320
Glu Val Leu Gly Leu Ile Leu Arg Tyr Val Met Glu Arg Lys Asn Ile
      2325                      2330                      2335
Leu Glu Glu Ser Leu Cys Glu Leu Val Ala Lys Gln Leu Lys Gln His
      2340                      2345                      2350
Gln Asn Thr Met Glu Asp Lys Phe Ile Val Cys Leu Asn Lys Val Thr
      2355                      2360                      2365
Lys Ser Phe Pro Pro Leu Ala Asp Arg Phe Met Asn Ala Val Phe Phe
      2370                      2375                      2380
Leu Leu Pro Lys Phe His Gly Val Leu Lys Thr Leu Cys Leu Glu Val
      2385                      2390                      2395                      2400
Val Leu Cys Arg Val Glu Gly Met Thr Glu Leu Tyr Phe Gln Leu Lys
      2405                      2410                      2415
Ser Lys Asp Phe Val Gln Val Met Arg His Arg Asp Glu Arg Gln Lys
      2420                      2425                      2430
Val Cys Leu Asp Ile Ile Tyr Lys Met Met Pro Lys Leu Lys Pro Val
      2435                      2440                      2445
Glu Leu Arg Glu Leu Leu Asn Pro Val Val Glu Phe Val Ser His Pro
      2450                      2455                      2460
Ser Thr Thr Cys Arg Glu Gln Met Tyr Asn Ile Leu Met Trp Ile His
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Asp Asn Tyr Arg Asp Pro Glu Ser Glu Thr Asp Asn Asp Ser Gln Glu
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Ile Phe Lys Leu Ala Lys Asp Val Leu Ile Gln Gly Leu Ile Asp Glu
      2500                      2505                      2510
Asn Pro Gly Leu Gln Leu Ile Ile Arg Asn Phe Trp Ser His Glu Thr
      2515                      2520                      2525
Arg Leu Pro Ser Asn Thr Leu Asp Arg Leu Leu Ala Leu Asn Ser Leu
      2530                      2535                      2540
Tyr Ser Pro Lys Ile Glu Val His Phe Leu Ser Leu Ala Thr Asn Phe
      2545                      2550                      2555                      2560
Leu Leu Glu Met Thr Ser Met Ser Pro Asp Tyr Pro Asn Pro Met Phe
      2565                      2570                      2575
Glu His Pro Leu Ser Glu Cys Glu Phe Gln Glu Tyr Thr Ile Asp Ser
      2580                      2585                      2590
Asp Trp Arg Phe Arg Ser Thr Val Leu Thr Pro Met Phe Val Glu Thr
      2595                      2600                      2605

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Gln Ala Ser Gln Gly Thr Leu Gln Thr Arg Thr Gln Glu Gly Ser Leu
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 Ser Ala Arg Trp Pro Val Ala Gly Gln Ile Arg Ala Thr Gln Gln Gln
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 His Asp Phe Thr Leu Thr Gln Thr Ala Asp Gly Arg Ser Ser Phe Asp
 2645 2650 2655
 Trp Leu Thr Gly Ser Ser Thr Asp Pro Leu Val Asp His Thr Ser Pro
 2660 2665 2670
 Ser Ser Asp Ser Leu Leu Phe Ala His Lys Arg Ser Glu Arg Leu Gln
 2675 2680 2685
 Arg Ala Pro Leu Lys Ser Val Gly Pro Asp Phe Gly Lys Lys Arg Leu
 2690 2695 2700
 Gly Leu Pro Gly Asp Glu Val Asp Asn Lys Val Lys Gly Ala Ala Gly
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 Arg Thr Asp Leu Leu Arg Leu Arg Arg Arg Phe Met Arg Asp Gln Glu
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 Lys Leu Ser Leu Met Tyr Ala Arg Lys Gly Val Ala Glu Gln Lys Arg
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 Glu Lys Glu Ile Lys Ser Glu Leu Lys Met Lys Gln Asp Ala Gln Val
 2755 2760 2765
 Val Leu Tyr Arg Ser Tyr Arg His Gly Asp Leu Pro Asp Ile Gln Ile
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 Lys His Ser Ser Leu Ile Thr Pro Leu Gln Ala Val Ala Gln Arg Asp
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 Pro Ile Ile Ala Lys Gln Leu Phe Ser Ser Leu Phe Ser Gly Ile Leu
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 Lys Glu Met Asp Lys Phe Lys Thr Leu Ser Glu Lys Asn Asn Ile Thr
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 Gln Lys Leu Leu Gln Asp Phe Asn Arg Phe Leu Asn Thr Thr Phe Ser
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 Phe Phe Pro Pro Phe Val Ser Cys Ile Gln Asp Ile Ser Cys Gln His
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 Ala Arg Leu Pro Pro Asp Val Leu Arg Trp Val Glu Leu Ala Lys Leu
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 Tyr Arg Ser Ile Gly Glu Tyr Asp Val Leu Arg Gly Ile Phe Thr Ser
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 Glu Ile Gly Thr Lys Gln Ile Thr Gln Ser Ala Leu Leu Ala Glu Ala
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 Arg Ser Asp Tyr Ser Glu Ala Ala Lys Gln Tyr Asp Glu Ala Leu Asn
 2965 2970 2975
 Lys Gln Asp Trp Val Asp Gly Glu Pro Thr Glu Ala Glu Lys Asp Phe
 2980 2985 2990
 Trp Glu Leu Ala Ser Leu Asp Cys Tyr Asn His Leu Ala Glu Trp Lys
 2995 3000 3005
 Ser Leu Glu Tyr Cys Ser Thr Ala Ser Ile Asp Ser Glu Asn Pro Pro
 3010 3015 3020
 Asp Leu Asn Lys Ile Trp Ser Glu Pro Phe Tyr Gln Glu Thr Tyr Leu
 3025 3030 3035 3040

Pro Tyr Met Ile Arg Ser Lys Leu Lys Leu Leu Leu Gln Gly Glu Ala
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 Asp Gln Ser Leu Leu Thr Phe Ile Asp Lys Ala Met His Gly Glu Leu
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 Gln Lys Ala Ile Leu Glu Leu His Tyr Ser Gln Glu Leu Ser Leu Leu
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 Tyr Leu Leu Gln Asp Asp Val Asp Arg Ala Lys Tyr Tyr Ile Gln Asn
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 Gly Ile Gln Ser Phe Met Gln Asn Tyr Ser Ser Ile Asp Val Leu Leu
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 Ile Gln Glu Phe Ile Ser Phe Ile Ser Lys Gln Gly Asn Leu Ser Ser
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 Asp Ala Lys Met Asp Pro Met Asn Ile Trp Asp Asp Ile Ile Thr Asn
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 Arg Cys Phe Phe Leu Ser Lys Ile Glu Glu Lys Leu Thr Pro Leu Pro
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 Glu Glu Ala Gln Pro Pro Ser Trp Ser Cys Gly Pro Ala Ala Gly Val
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 Tyr Pro Ala Leu Val Val Glu Lys Met Leu Lys Ala Leu Lys Leu Asn
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 Ser Asn Glu Ala Arg Leu Lys Phe Pro Arg Leu Leu Gln Ile Ile Glu
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Arg Tyr Pro Glu Glu Thr Leu Ser Leu Met Thr Lys Glu Ile Ser Ser
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 Val Pro Cys Trp Gln Phe Ile Ser Trp Ile Ser His Met Val Ala Leu
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 Leu Asp Lys Asp Gln Ala Val Ala Val Gln His Ser Val Glu Glu Ile
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 Lys Asp Trp Ser Asn Asp Val Arg Ala Glu Leu Ala Lys Thr Pro Val
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 Asn Lys Lys Asn Ile Glu Lys Met Tyr Glu Arg Met Tyr Ala Ala Leu
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 Gln Thr Phe Gly Lys Glu Phe Asp Lys His Phe Gly Lys Gly Gly Ser
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 Glu Tyr His Val Arg Ile Ala Gly Phe Asp Glu Arg Val Thr Val Met
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 Ala Ser Leu Arg Arg Pro Lys Arg Ile Ile Ile Arg Gly His Asp Glu
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 Arg Glu His Pro Phe Leu Val Lys Gly Gly Glu Asp Leu Arg Gln Asp
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 Gln Arg Val Glu Gln Leu Phe Gln Val Met Asn Gly Ile Leu Ala Gln
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 Asp Ser Ala Cys Ser Gln Arg Ala Leu Gln Leu Arg Thr Tyr Ser Val
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 Val Pro Met Thr Ser Ser Asp Pro Arg Ala Pro Pro Cys Glu Tyr Lys
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 Asp Trp Leu Thr Lys Met Ser Gly Lys His Asp Val Gly Ala Tyr Met
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 Leu Met Tyr Lys Gly Ala Asn Arg Thr Glu Thr Val Thr Ser Glu Arg
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 Lys Arg Glu Ser Lys Val Pro Ala Asp Leu Leu Lys Arg Ala Phe Val
 3845 3850 3855
 Arg Met Ser Thr Ser Pro Glu Ala Phe Leu Ala Leu Arg Ser His Phe
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 Ala Ser Ser His Ala Leu Ile Cys Ile Ser His Trp Ile Leu Gly Ile
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 Gly Asp Arg His Leu Asn Asn Phe Met Val Ala Met Glu Thr Gly Gly
 3890 3895 3900

Val Ile Gly Ile Asp Phe Gly His Ala Phe Gly Ser Ala Thr Gln Phe
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 Leu Pro Val Pro Glu Leu Met Pro Phe Arg Leu Thr Arg Gln Phe Ile
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 Asn Leu Met Leu Pro Met Lys Glu Thr Gly Leu Met Tyr Ser Ile Met
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 Val His Ala Leu Arg Ala Phe Arg Ser Asp Pro Gly Leu Leu Thr Asn
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 Thr Met Asp Val Phe Val Lys Glu Pro Ser Phe Asp Trp Lys Asn Phe
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 Glu Gln Lys Met Leu Lys Lys Gly Gly Ser Trp Ile Gln Glu Ile Asn
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 Ala Arg Gly Ser Lys Asp His Asn Ile Arg Ala Gln Glu Pro Glu Ser
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 Gly Leu Ser Glu Glu Thr Gln Val Lys Cys Ile Met Asp Gln Ala Thr
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 Pro His Trp Tyr His Phe Ser Cys Phe Trp Lys Val Gly His Ser Ile
 50 55 60
 Arg His Pro Asp Val Glu Val Asp Gly Phe Ser Glu Leu Arg Trp Asp
 65 70 75 80
 Asp Gln Gln Lys Val Lys Lys Thr Ala Glu Ala Gly Gly Val Thr Gly
 85 90 95
 Lys Gly Gln Asp Gly Ile Gly Ser Lys Ala Glu Lys Thr Leu Gly Asp
 100 105 110
 Phe Ala Ala Glu Tyr Ala Lys Ser Asn Arg Ser Thr Cys Lys Gly Cys
 115 120 125
 Met Glu Lys Ile Glu Lys Gly Gln Val Arg Leu Ser Lys Lys Met Val
 130 135 140
 Asp Pro Glu Lys Pro Gln Leu Gly Met Ile Asp Arg Trp Tyr His Pro
 145 150 155 160

Gly	Cys	Phe	Val	Lys	Asn	Arg	Glu	Glu	Leu	Gly	Phe	Arg	Pro	Glu	Tyr		
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Ser	Ala	Ser	Gln	Leu	Lys	Gly	Phe	Ser	Leu	Leu	Ala	Thr	Glu	Asp	Lys		
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Glu	Ala	Leu	Lys	Lys	Gln	Leu	Pro	Gly	Val	Lys	Ser	Glu	Gly	Lys	Arg		
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Lys	Gly	Asp	Glu	Val	Asp	Gly	Val	Asp	Glu	Val	Ala	Lys	Lys	Lys	Ser		
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Lys	Lys	Glu	Lys	Asp	Lys	Asp	Ser	Lys	Leu	Glu	Lys	Ala	Leu	Lys	Ala		
225					230					235					240		
Gln	Asn	Asp	Leu	Ile	Trp	Asn	Ile	Lys	Asp	Glu	Leu	Lys	Lys	Val	Cys		
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Ser	Thr	Asn	Asp	Leu	Lys	Glu	Leu	Leu	Ile	Phe	Asn	Lys	Gln	Gln	Val		
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Pro	Ser	Gly	Glu	Ser	Ala	Ile	Leu	Asp	Arg	Val	Ala	Asp	Gly	Met	Val		
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Phe	Gly	Ala	Leu	Leu	Pro	Cys	Glu	Glu	Cys	Ser	Gly	Gln	Leu	Val	Phe		
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Lys	Ser	Asp	Ala	Tyr	Tyr	Cys	Thr	Gly	Asp	Val	Thr	Ala	Trp	Thr	Lys		
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Cys	Met	Val	Lys	Thr	Gln	Thr	Pro	Asn	Arg	Lys	Glu	Trp	Val	Thr	Pro		
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Lys	Glu	Phe	Arg	Glu	Ile	Ser	Tyr	Leu	Lys	Lys	Leu	Lys	Val	Lys	Lys		
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Gln	Asp	Arg	Ile	Phe	Pro	Pro	Glu	Thr	Ser	Ala	Ser	Val	Ala	Ala	Thr		
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Pro	Pro	Pro	Ser	Thr	Ala	Ser	Ala	Pro	Ala	Ala	Val	Asn	Ser	Ser	Ala		
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Ser	Ala	Asp	Lys	Pro	Leu	Ser	Asn	Met	Lys	Ile	Leu	Thr	Leu	Gly	Lys		
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Leu	Ser	Arg	Asn	Lys	Asp	Glu	Val	Lys	Ala	Met	Ile	Glu	Lys	Leu	Gly		
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Gly	Lys	Leu	Thr	Gly	Thr	Ala	Asn	Lys	Ala	Ser	Leu	Cys	Ile	Ser	Thr		
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Lys	Lys	Glu	Val	Glu	Lys	Met	Asn	Lys	Lys	Met	Glu	Glu	Val	Lys	Glu		
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Ala	Asn	Ile	Arg	Val	Val	Ser	Glu	Asp	Phe	Leu	Gln	Asp	Val	Ser	Ala		
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Ser	Thr	Lys	Ser	Leu	Gln	Glu	Leu	Phe	Leu	Ala	His	Ile	Leu	Ser	Pro		
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Trp	Gly	Ala	Glu	Val	Lys	Ala	Glu	Pro	Val	Glu	Val	Val	Ala	Pro	Arg		
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Val	Leu	Glu	Lys	Gly	Gly	Lys	Val	Phe	Ser	Ala	Thr	Leu	Gly	Leu	Val		
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Asp	Asp	Lys	Glu	Asn	Arg	Tyr	Trp	Ile	Phe	Arg	Ser	Trp	Gly	Arg	Val		
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 Asp Ala Ile Glu His Phe Met Lys Leu Tyr Glu Glu Lys Thr Gly Asn
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 Ala Trp His Ser Lys Asn Phe Thr Lys Tyr Pro Lys Lys Phe Tyr Pro
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 Leu Glu Ile Asp Tyr Gly Gln Asp Glu Glu Ala Val Lys Lys Leu Thr
 645 650 655
 Val Asn Pro Gly Thr Lys Ser Lys Leu Pro Lys Pro Val Gln Asp Leu
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 Ile Lys Met Ile Phe Asp Val Glu Ser Met Lys Lys Ala Met Val Glu
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 Tyr Glu Ile Asp Leu Gln Lys Met Pro Leu Gly Lys Leu Ser Lys Arg
 690 695 700
 Gln Ile Gln Ala Ala Tyr Ser Ile Leu Ser Glu Val Gln Gln Ala Val
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 Ser Gln Gly Ser Ser Asp Ser Gln Ile Leu Asp Leu Ser Asn Arg Phe
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 Tyr Thr Leu Ile Pro His Asp Phe Gly Met Lys Lys Pro Pro Leu Leu
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 Leu Asp Ile Glu Val Ala Tyr Ser Leu Leu Arg Gly Gly Ser Asp Asp
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 Ser Ser Lys Asp Pro Ile Asp Val Asn Tyr Glu Lys Leu Lys Thr Asp
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 Ile Lys Val Val Asp Arg Asp Ser Glu Glu Ala Glu Ile Ile Arg Lys
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 Tyr Val Lys Asn Thr His Ala Thr Thr His Asn Ala Tyr Asp Leu Glu
 820 825 830
 Val Ile Asp Ile Phe Lys Ile Glu Arg Glu Gly Glu Cys Gln Arg Tyr
 835 840 845
 Lys Pro Phe Lys Gln Leu His Asn Arg Arg Leu Leu Trp His Gly Ser
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 Arg Thr Thr Asn Phe Ala Gly Ile Leu Ser Gln Gly Leu Arg Ile Ala
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 Pro Pro Glu Ala Pro Val Thr Gly Tyr Met Phe Gly Lys Gly Ile Tyr
 885 890 895
 Phe Ala Asp Met Val Ser Lys Ser Ala Asn Tyr Cys His Thr Ser Gln
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 Gly Asp Pro Ile Gly Leu Ile Leu Leu Gly Glu Val Ala Leu Gly Asn
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 Met Tyr Glu Leu Lys His Ala Ser His Ile Ser Lys Leu Pro Lys Gly
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 Lys His Ser Val Lys Gly Leu Gly Lys Thr Thr Pro Asp Pro Ser Ala
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